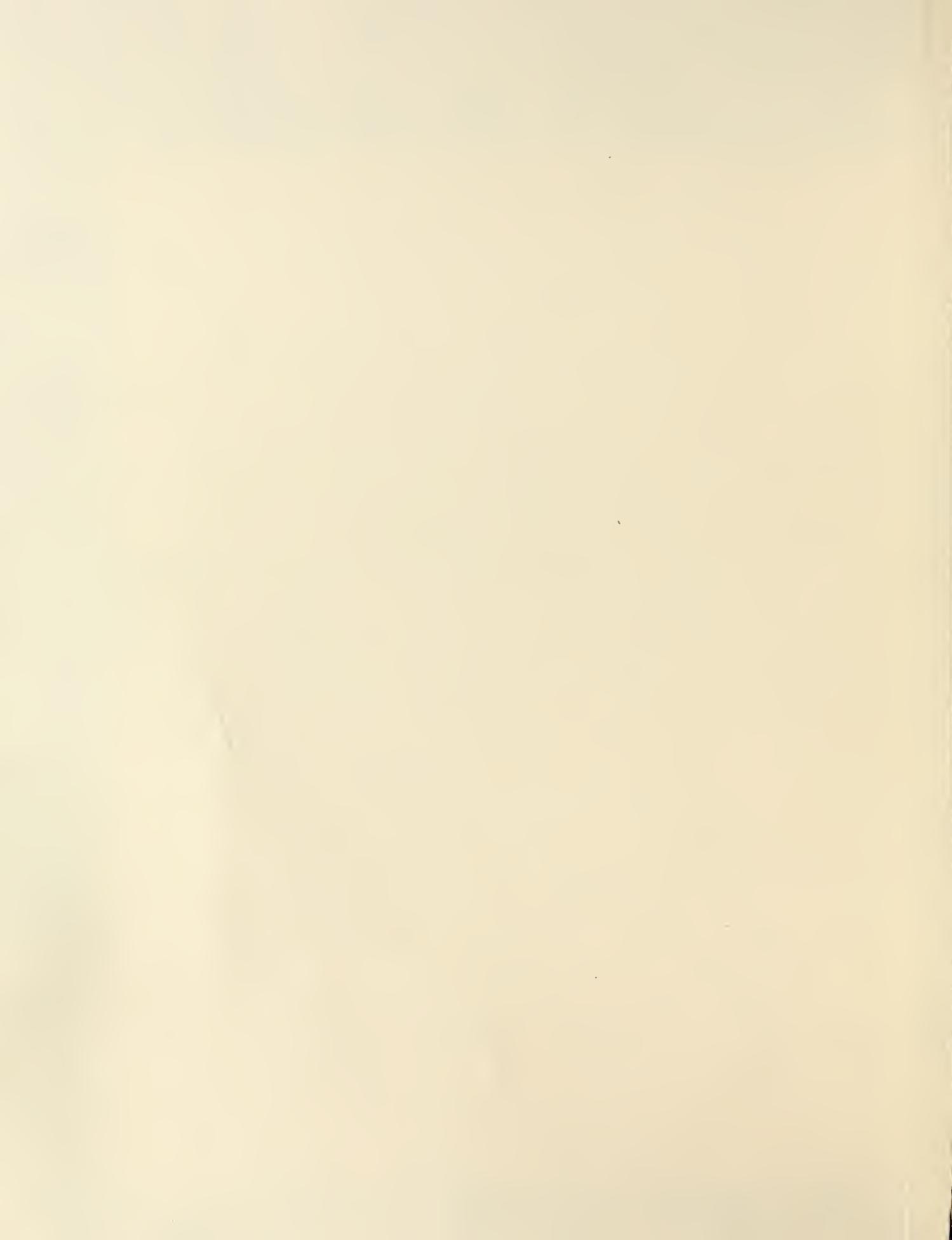


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SOIL CONSERVATION SERVICE NEWS

Region 4

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REGIONAL OFFICE--FORT WORTH, TEXAS

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DETAILED FLOOD CONTROL SURVEY UNDERWAY

By Arnold H. Bean

Soil Scientist

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Work is now moving forward rapidly on the detailed flood control survey of the Trinity River watershed, being conducted by the Department of Agriculture, Division of the flood control surveys.

The detailed study of the Trinity was the first to be authorized in the United States for the Department of Agriculture under provisions of the Omnibus Flood Control Act passed by Congress in June 1936 and amended in August 1937.

By authority of this bill the Department of Agriculture has set up 23 field coordinating committees to represent the Department in the investigation of watersheds that embrace most of the continental United States.

Louis P. Merrill, regional conservator for the Soil Conservation Service, is chairman of the field coordinating committee which serves a large part of Texas and areas in Louisiana and Arkansas. Serving with him on the committee is Glen Briggs, Little Rock, Ark., regional director of the Bureau of Agricultural Economics and E. L. Demmon, New Orleans, director of the Southern Forest Experiment Station.

The Department of Agriculture flood control surveys group has established headquarters in Fort Worth, from which point activities of the field parties making the detailed survey of the Trinity in Texas are supervised. E.B. Deeter, head of the section of watershed surveys for Region 4 of the Soil Conservation Service; Dr. Lewis M. Turner, U. S. Forest Service and C. O. Henderson, Bureau of Agricultural Economics, are members of the field working committee. J. W. Browning is the senior representative for the Bureau of Agricultural Economics.

Work now being done in connection with the Trinity Survey includes a reconnaissance survey over the entire watershed to locate problem areas which will be singled out for detailed survey.

At the present time there are three field parties engaged in investigations of water and soil losses and flood damage within the Trinity watershed.

One party consisting of a soil technologist and an agricultural economist, accompanied by an engineer from the United States Engineer's office at Galveston, is making a detailed reconnaissance of the alluvial area along the main river and its principal tributaries. They are collecting data concerning the physical damage caused by flood waters and are investigating productivity and values of land for crops, pasture or forest production, giving consideration to the frequency of overflows and the resulting flood damage. They also are determining possible benefits which may accrue as a result of reduction of the flood hazard.

Another party, through cooperation with the Section of Sedimentation Studies, Division of Research, Soil Conservation Service, is making a detailed study of rates and amounts of sedimentation in Lake Dallas, Denton County. This study will show the amounts of silt and sand that have been deposited in the lake, and through surveys in the tributary flood plains and channels, will show how much sediment has been deposited by water destined for the lake before the water actually reaches the lake basin. Silt samples taken from the lake will reveal from what areas of the watershed it came.

The third party, consisting of conservationists, foresters, engineers, soil technologists, and agricultural economists, is engaged in sample area analysis in the East Cross Timber section of Denton County. Conservation surveys are being made of representative farms. Economic analysis will be made of the same farms and finally plans for water and soil conservation will be prepared for the area. Special attention is given to study of flood and silt sources within these sample areas through investigation of eroded areas, gullies, roadside ditches, woodlands and pastures. These studies not only consider amounts of water and soil lost, but also determine rate of loss and final destination of eroded soil.

Through sample area analysis, sedimentation studies, and the examinations in the lower valley coupled with a careful compilation of available data, a complete plan will be developed to fulfill the obligations of the U.S. Department of Agriculture in the preparation of a Survey Report on the Trinity.

The Survey Report corresponds somewhat to a Project work program in that the most economical and feasible plan of control is proposed and justified. This plan must be complete and consider the flood problem, remedial measures needed, amounts of costs of these remedial measures, the effect of the application of these measures on the economic and social system and the benefits to be derived from their application.

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DISTRICT PROGRESS IN ARKANSAS .

Soil and water conservation practices are now being installed on 555 farms embracing more than 72,365 acres located in the ten state soil conservation districts of Arkansas.

As of September 1, more than 2,256 farmers in the districts had filed applications with their respective district supervisors requesting assistance in establishing complete and coordinated erosion control programs on their land.

In addition to the 555 farms already under agreement, 153 other farms in the districts with a land area of 19,626 acres have been planned for conservation operations with the assistance of technicians of the Soil Conservation Service.

Soil scientists of the Service have completed conservation surveys on 643,555 acres of land in the districts.

During the month of August more than 800 farmers who operate land within the districts attended 22 educational meetings and 115 other farmers attended four meetings scheduled to discuss details of conservation programs being installed on their farms. Each of the boards of supervisors of the 10 districts met last month to discuss conservation work in their respective districts.

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LISTING INCREASES GRASS YIELDS

Results obtained on experimental pasture plots at the Spur, Tex., Experiment Station show that the yield of grass was 1352 pounds from a contour listed pasture after the first year of listing. An untreated pasture plot yielded 592 pounds of grass. The second year after treatment, the contour listed plot produced 2315 pounds of grass.

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COVER CROPS IN LOUISIANA MAKE INCREASED YIELDS POSSIBLE

The value of winter legumes in controlling erosion and improving soil so that increased yields of cotton or corn are produced on land where these green manure crops have been plowed under was strikingly illustrated in a survey of some of the 139 farms under cooperative agreement with the Service in the Pleasant Hill CCC Camp area made last month by Don Ewing, agricultural editor of the Shreveport Times.

These plants grown on the land during the winter and early spring months formed a dense land cover to resist the erosive action of rainfall. In addition to providing a protective mat for the soil these crops added nitrogen and organic matter to the soil when they were turned under last spring.

The use of cover crops is one of several practices employed on the hill farms of Louisiana to conserve soil and water. All of the farms are treated with contour cultivation, crop rotations, strip cropping and terracing.

This section of the region is fortunate in being able to grow a cover crop which will conserve soil and at the same time make it possible to increase yields of crops that follow.

Last April, Mr. Ewing made a tour of the area to observe the wide-spread use of such winter legumes as Austrian Winter Peas, Vetch and Bur clover on cooperating farms. Last month he went over the same farms to look at the crops growing on land where the legumes had been turned under.

Sam Peck, who farms 80 acres near Oxford, told Mr. Ewing that his cotton yield this fall will be better than three-fourths of a bale to the acre on land that used to make a bale to three acres in a "fine cotton year" and about a bale to four acres in an ordinary cotton year. Mr. Peck planted his first cover crops in the fall of 1936 - Vetch and Austrian Winter Peas - and his 1937 cotton yield was nearly a bale to the acre. Last fall he planted more winter legumes, but he fertilized to produce a greater tonnage of green matter to turn under. This year the cotton stalks on some of the land that received the benefit of legumes are shoulder-high. The average hill cotton around Pleasant Hill grows about knee-high.

Mr. Peck explained that three times more cotton is being picked from fields where legumes were turned under than is being picked from patches where cover crops were not grown. He adds that 1938 is not a bumper cotton year either.

A. R. Rembert, another cooperator, estimates that his yield will be better than a half-bale to the acre on land he considered ready for abandonment a year before he grew his first winter cover crop.

Pointing to the value of fertilizing legumes, Mr. Rembert stated that Vetch, given the benefit of an application of basic slag grew as high as 36 inches while the unfertilized Vetch attained an average height of about eight inches. The average green matter tonnage turned into the soil was 15 tons to the acre.

Mr. Rembert's cotton is waist-high on land where the Vetch was fertilized and 12 to 18 inches high on areas where the legumes did not receive fertilizer.

Otho Osborne expects to harvest from 30 to 35 bushels of corn to the acre this year from fields that used to average 15 bushels. This corn is coming from land where Austrian Winter Peas grew to a height of 50 inches last winter. Cover crops turned under improved the condition of the soil - added organic matter that increased the ability of the soil to absorb and hold greater quantities of moisture. The legumes also added nitrogen to the soil. Working hand in hand with the erosion control crops, contour rows, strip crops and terraces caught and held the water until a large part of it could be taken up by the soil.

Some of the ears of corn taken from stalks in the fields of Sam Guy weighed more than a pound - and many were better than 10 inches in length. Dwarf corn ears from land where cover crops were not plowed under averaged six inches in length. Mr. Guy estimates his corn yield will be about 20 bushels to the acre, compared to an average yield of 8 to 10 bushels per acre on untreated hill farms adjoining.

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CROP RESIDUE AND GRASSES VALUABLE AS WINTER LAND COVER

By W. M. Nixon, Assistant Agronomist

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Experiments have proved that 100 pounds of sand will hold 25 pounds of water; 100 pounds of clay will hold 50 pounds of water and 100 pounds of organic matter will hold 190 pounds of water.

It is reasonable to assume, therefore, that any vegetation left on the land to serve as a mat to soak up rainfall will be of benefit in preventing soil losses.

Crop residues and land cover furnished by native grasses play an important part in conserving the soil during the winter and early spring months when the land is exposed to heavy rains. Vegetation left on the land diminishes the erosive velocity of rain drops; the roots open cavities in the soil which permit greater percolation of rainwater into the ground. Although there are many factors that govern the absorptive capacity of the soil the amount of organic material mixed with the soil increases its ability to absorb water.

Legumes and small grain are the most desirable crops for winter cover in all parts of Region 4, but the average farmer is not able to devote all of his acreage to these crops. Careful consideration should be given to the selection of areas of crop land to be planted to winter cover crops, leaving the other acreage to be protected by crop residue and native grass cover.

In most cases the corn land will furnish more crop residue and native cover. The cotton land is cultivated later and more intensively than that which has been devoted to corn, and will probably be the most desirable for the planting of winter legumes and small grain.

The crop rotation most generally used in Region 4 is cotton, followed by corn and peas. By using legumes and small grain cover on cotton land, with crop residue and native grass cover on the corn land, winter cover can be provided on all crop land.

To secure the maximum value from residue and grass cover, the grazing of crop land during the fall and winter months should be controlled. Stock will graze and trample crop residue and grass cover so heavily that sufficient cover to control erosion or material to be turned under in the spring will be destroyed. Livestock will damage terraces and the soil, especially during wet weather.

(*Panicum fasciculatum*) commonly called Browntop millet or bunch grass, and (*Digitaria sanguinalis*) crab grass, make sufficient growth after corn is laid by to furnish an excellent cover for fall and winter months. These grasses, usually considered undesirable, can be made to serve a purpose in controlling soil erosion and in adding fertility to the soil.

The topping of corn and burning of corn and cotton stalks are practices that should be discouraged. Experiments have shown that yields have been decreased from 6% to 8% where corn is topped, compared with untopped areas. Considering the decreased yield and loss of crop residue, compared with the roughage obtained, it can be seen that topping is of doubtful value.

Where stalks are raked and burned, soil loss is encouraged and the soil is robbed of valuable humus and organic material which should be returned to it.

With the proper utilization of crop residue in connection with a crop rotation the organic content of the soil will be maintained. Organic matter in the soil allows greater absorption of moisture and better growth of crops which tend to control erosion.

FOREIGN CONSERVATION OFFICERS VISIT REGION 4

Two agricultural officials from South Africa visited projects and camps in Texas early this month to study erosion control methods in use in this section of the United States and to observe cropping methods and other problems related to conservation work.

First to arrive in Texas was H. Rivers Hoskings, officer in charge of the Serere Experiment Station of the Department of Agriculture, Entebbe, Uganda Protectorate. Mr. Hoskings inspected soil conservation work at the Garland project and observed cotton experiment work in other sections of the state.

H. R. Roberts, senior engineer, Department of Native Affairs, Union of South Africa, arrived after Mr. Hoskings had departed, and inspected erosion control work at the Vernon, Temple and Dublin projects and at the Gatesville Camp.

Schedules for these men had called for them to inspect work in Louisiana and Arkansas, but due to the limited time they have to complete their national tour they were compelled to omit these states from their itinerary.

Mr. Roberts indicated that methods for controlling erosion in this country do not differ greatly from those employed in Africa where slopes, soils, climatic conditions and control problems are comparable.

"I have been impressed on my tour of the United States with the extensive use that is being made of ordinary, but modern, agricultural practices to control erosion - practices that the farmer can apply with his own tools and labor," Mr. Roberts said.

He explained that the principal control work being done in South Africa consists of terracing, the use of dams, fencing and some gully control work.

Gully control work in Africa is handled very much in the manner it is in the United States. Diversion of water from gully heads and the planting of vegetation in the gullies is the system followed. The vegetation used, however, consists primarily of trees; Black Locusts, poplars and willow.

He said that fencing is an important phase of erosion control work being done in areas occupied by natives. Slopes are fenced to exclude livestock so that grass will have an opportunity to become established on sparsely covered areas.

Rock and masonry structures are not used to any extent in his territory, Mr. Roberts said, because it has been found that these structures are expensive and not as effective as earthen structures re-inforced with grass.

The visiting engineer said that more than 3,000 miles of terraces have been built on lands in the native sections. Agricultural activity in these sections consists primarily of subsistence farming. The principal crops are Kaffir and Indian corn raised for home consumption. The major agricultural enterprise is livestock, much of the area being devoted to grazing land.

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COMMENTS ON SOIL CONSERVATION

W. L. Pier, vice president, Fort Worth National Bank: "Only as farmers prosper can we in the cities prosper. Our Fort Worth Chamber of Commerce agriculture committee has felt that soil conservation work is the greatest improvement being made in agriculture. After a visit to the Dublin project, we know it."

United States Senator John E. Miller of Arkansas: "We have arrived at the time, when if we are going to maintain our social structure in this country, we must establish soil erosion control. We want to make a living from our farms and at the same time have something worthwhile that we can pass along to posterity. Soil conservation practices are the key to soil and moisture conservation to flood control and erosion control over a wide area. If a complete reservoir and pasture treatment program were established on all farms drouth conditions would be diminished."

"Arkansas has 10 of the 36 soil conservation districts in the United States and Arkansas is a pattern for the rest of the nation. Lancaster, Penna., the home of the Mennonites, is the richest county in the United States because they have been practicing soil conservation for years. The land and other physical features of Lancaster County are much like those here in Arkansas and what men have done there, we can do here, - and better."

"The whole basis of civilization and the entire economic structure of society in this country is wrapped up in the soil. If all farms had good pastures and a stock pond there would be a substantial lessening of floods in Arkansas."

"More than 600 farmers with whom I have talked recently have assured me that conservation practices will save and improve the soil in the most practicable way. It helps farmers to get away from the crop systems and to enjoy the increased cash returns when each acre on the farm is used for the purpose to which it is best adapted."

REGIONAL ACCOMPLISHMENTS LISTED

Progress Figures to date

As of June 30, 1938

Farms on which erosion control practices have been established	9,670
No. of acres in farms under agreement	1,589,270

	<u>Before Contract</u>	<u>After Contract</u>
Acres in cultivation	825,204	676,956
Acres retired from cultivation	162,414	
Acres retired to pasture	115,170	
Acres retired to meadow	29,188	
Acres retired to forest	15,225	
Acres contour tilled	39,299	591,126
Acres strip cropped	3,213	516,442
Acres planted to winter cover crops		83,696
Acres of woodlands	352,523	322,653
Acres new meadow established		29,604
Total pasture acres	351,746	502,613
No. miles terraces built	15,597 (actual)	
Acres protected by terraces	244,136 "	
Sq. yds. seeded or sodded outlets	5,415,743 "	
Trees planted	23,950,000 "	
Sq. yds. fully banks sloped or sodded	9,378,897 "	
Acres pasture ridged or furrowed	144,418 "	
Acres pasture seeded or sodded	166,011 "	

DISTRICT WORK MOVES FORWARD IN LOUISIANA

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Seventeen public hearings will be conducted in seven proposed soil conservation districts in Louisiana during late September and early October, Dean J.G. Lee, Louisiana State University, and chairman of the state soil conservation committee, announced.

Eighteen petitions from groups of farmers seeking the creation of districts in their respective watersheds or other agricultural areas have been received by the state committee since the state soil conservation districts law became operative on July 27.

Hearings to provide an opportunity for landowners to express their views regarding the organization of districts will be held in the following proposed districts:

Amite River, D'Arbonne, Dorcheat, Upper Sabine, Upper West Red River, Seline Black Lake and Upper Red River watersheds. Definite dates for meetings in the Pearl River Watershed have not yet been set.

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REGIONAL CONSERVATOR RETURNS FROM ALASKA

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Louis P. Merrill, regional conservator, returned to Fort Worth on September 14 from Alaska where he spent six weeks making a special study of erosion conditions. In Alaska he worked with W. A. Rockie, associate regional conservator for Region 11 of the Service.

Mr. Merrill and Mr. Rockie conducted their investigation of erosion conditions in Alaska in the Matanuska Valley, in the vicinity of Fairbanks along the Tanana River and near Palmer. They also visited Kodiak Island.

The conservator said that there are about 65,000,000 acres of land suited for cultivation in areas where the climate will permit farming and 35,000,000 acres suitable for grazing. There is only a small amount of land now in cultivation.

Serious erosion conditions have been reported in the past by the University of Alaska Experiment Station and other interested groups. Mr. Merrill and Mr. Rockie made their study to determine the extent of erosion and to learn what control measures could be successfully applied. It is hoped that erosion control farming practices can be introduced as new agricultural lands are opened up so that later curative programs will not be necessary.

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